

Serial No. 10/760,651

Docket No. 200313615-1

REMARKS

Claims 1-35 are currently pending in the subject application, and are presently under consideration. Claims 12-24 are allowed. Claims 1-3, 8-10, 12, 1, 25 and 29-31 are rejected. Claims 4-7, 11, 26-28 and 32-35 have been indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Amendments to the Specification

The Related Application section of the present application has been amended to replace the identified attorney docket numbers with the application serial numbers and to identify the common filing date of the identified applications.

II. Rejection of Claims 1, 8-10, 12, 16, 25, 29-31 under 35 U.S.C. 103(a)

Claims 1, 8-10, 12, 16, 25, 29-31 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 6,654,858 to Asher, et al. ("Asher") in view of U.S. Patent Publication No. 6,711,653 Quach, et al. ("Quach"). Applicant traverses this rejection for the following reasons.

The Office Action admits that Asher fails to disclose the conflict response indicating that an ordering point for the data is migrating according to a second cache coherency protocol. The Office Action further contends Quach discloses the conflict response indicating that an ordering point for the data is migrating according to a second cache coherency protocol which is different from the first cache coherency protocol. We respectfully disagree with this contention. In sharp contrast, Quach as a whole fails to teach or suggest any conflict response indicating that an

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ordering point is migrating using either a first or a second cache coherency protocol.

Furthermore, the cited sections of Quach and are silent regarding ordering point migration.

Moreover, the Office Action appears to have misconstrued the teachings of Quach by contending that the conflict response to the second request is according to a second cache coherency protocol which is different from the first cache coherency protocol. In sharp contrast, Quach teaches selecting only one cache coherency protocol at system boot based upon the operating environment's support or lack of support for memory attribute aliases ("MAA"). See Quach Abstract and Col. 3, lines 36 to 48. The Office Action further cites sections of Quach that teach a system for handling MAA operating only under a second cache coherency protocol at all nodes while not concurrently using a first cache coherency protocol. See Quach Col. 7, line 40, to Col. 8, line 47. Significantly, Quach fails to teach or suggest the interrelationship between requests and using different cache coherency protocols during operation after a coherency protocol is selected during system boot. Instead, as discussed above, Quach teaches that a single cache coherency protocol is established at system boot. Consequently, the combination of Quach and Asher also fails to teach or suggest the system recited in claim 1.

Additionally, Asher fails to establish any basis to provide a conflict response indicating that an ordering point is migrating. Notably, Asher states that "each block has a home node that preferably never changes," and that "the home node is responsible for updating the directory entry for each of its data blocks to maintain coherency." See Asher Col. 6, ll. 16 to 20. That is, Asher explicitly teaches ordering points preferably never migrate, such that there would be a lack of motivation or even a teaching away from modifying Asher to employ ordering point migration consistent with the approach recited in claim 1. Since the combined teachings of Asher and Quach fail to teach or suggest any mechanism to deal with ordering point migration, there is

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likewise no teaching or suggestion or motivation to modify the system in Asher to implement the recited use of a conflict response to indicated that an ordering point is migrating according to a second cache coherency protocol, as recited in claim 1.

For at least these reasons, Asher in view of Quach lacks sufficient basis to motivate one of ordinary skill in the art to create the system of claim 1. Accordingly, the Applicant respectfully requests reconsideration and allowance of claim 1 and dependent claims 2 to 11.

The Office Action contends that Asher in view of Quach discloses claim 25. We respectfully disagree with this contention. Instead, Asher and Quach, taken individually or in combination, fail to teach or suggest a means for transitioning a cache state for data at a first processor node from an ownership state to a transition state. Significantly, each of Asher and Quach fails to teach or suggest the existence of a transition state, as recited in claim 25. Moreover, as discussed in support of claim 1, both Asher and Quach fail to teach, suggest or provide motivation for one of ordinary skill in the art to create a system in which ordering points migrate, such that there would be no rationale to implement the use of a transition state in the approaches taught by Asher or Quach. Additionally, as discussed above with respect to claim 1, Quach fails to teach or suggest the interrelationship between first and second cache coherency protocols and requests for data consistent with the approach recited in claim 25. For these reasons and the reasons given in support of claim 1, claim 25 is allowable over Asher in view of Quach. Accordingly, the Applicant requests reconsideration and allowance of claim 25 and dependent claims 26 to 30.

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Regarding claim 31, the Office Action admits that Asher fails to disclose a response that is associated with migration of an ordering point from a cache of a first processor to cache of a second processor. However, the Office Action appears to have, again, misconstrued the teachings of Quach by contending that Quach teaches a response associated with migration of an ordering point, as recited in claim 31. Instead, Quach teaches a method for handling memory attribute aliases via a second cache coherency protocol without teaching or suggesting ordering point migration. Quach Col. 7, line 40, to Col. 8, line 48. Moreover, both Asher and Quach fail to teach or suggest reissuing the snoop request from the home node in response to receiving the response at the home node associated with migration of an ordering point. Accordingly, Applicant respectfully requests reconsideration and allowance of claim 31 and dependent claims 32 to 35.

III. Rejection of Claims 2-3 under 35 U.S.C. 103(a)

Claims 2-3 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Asher in view of Quach and further in view of U.S. Patent Publication No. 6,883,070 to Martin, et al. ("Martin"). Applicant traverses this rejection for the following reasons.

Claims 2 and 3 are patentable for at least the same reasons discussed above with respect to claim 1. Moreover, the addition of Martin does not cure the deficiencies of Asher in view of Quach as applied to these claims.

Additionally, in respect to claim 2, the Office Action admits that Asher in view of Quach fails to teach or suggest that the home node provides a retry request associated with the second request for the data in response to the conflict response from the second node. However, the Office Action contends that Martin discloses the home node provides a retry request associated

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with the second request for the data. In sharp contrast to this contention, Martin fails to disclose a second request for the data. See Martin Fig. 2, Fig. 3, Col. 8, lines 26-33. Instead, Martin teaches responses when a memory block 19 of a first dual cast request is not owned by the memory controller 11 of a shared memory 16. See Martin Col. 8, lines 26 to 33. Additionally, Martin discloses that the dual cast request is a request simultaneously transmitted from a processor unit 12a to itself and to the shared memory directory 21, i.e. a single request. See Martin Col. 6 ll. 1 to 3. Although, Martin discloses first requests from first nodes 12a, Martin remains silent regarding a second node providing a conflict response to the second request for the data from the home node. See Martin Fig. 2, 3, 7. For example, Martin fails to teach or suggest that nodes 12b to 12f to provide a conflict responses (or any response) in response to a second request for the data from the home node 16. See Martin and Figs. 2, 3 and 6, and Col. 4, line 64 to Col. 6, line 16, and Col. 7, line 66, to Col. 8, line 33. Therefore, Asher in view of Quach, further in view of Martin fails to teach or suggest claim 3. Since the combination of Asher, Quach and Martin fail to teach or suggest the particular conflict response recited in claim 1 (from which claim 2 depends), the combination consequently also fails to teach or suggest that the home node would provide a retry request in response to such conflict response, as recited in claim 2. Accordingly, Applicant respectfully requests reconsideration and allowance of claim 2 and claim 3 that depends from claim 2.

Further, in regard to claim 3, the Office Action appears to have misconstrued the teachings of Martin by contending that the home node receives a copy of the data. Instead, the cited section of Martin fails to teach or suggest that the home node receives a response that includes a copy of the data to complete the request from the first node, as recited in claim 3. See Martin Col. 8 ll. 1 to 48. Instead, Martin discloses that messages are sent to other nodes if the

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home node 16 is not the owner based upon availability of a buffer and further states that if the block 19 is not owned by the home node 16, "no data is sent." See Martin Col. 8, lines 1 to 48. For these reasons, Asher in view of Quach, further in view of Martin fails to teach or suggest claim 3. Accordingly, Applicant respectfully requests reconsideration and allowance of claim 3.

IV. Allowable Subject Matter

Applicant appreciates the indication that claims 12 to 24 have been allowed and that claims 4 to 7, 11, 26-28, 32 and 35 contain allowable subject matter. If the claims from which they depend remain rejected, the Applicant respectfully reserves the right to re-write these claims in independent form. Accordingly, Applicant requests that the objections to claims 4-7, 11, 26-28, 32-35 be withdrawn, however, for at least the reasons discussed herein with respect to the claims from which they depend.

V. CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 106.

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No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 08-2025.

Respectfully submitted,

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